

Appl. No. 10/074,018
Supplemental Amendment dated September 9, 2005

NIT-323

Amendments to the Claims:

This listing of claims will replace all prior versions and listing of claims in the application.

Listing of Claims:

1-14. (Canceled)

15. (New) A light source provided with an ultraviolet visible excitation light generation unit that generates first visible light and ultraviolet light and a fluorescence generation unit having a phosphor screen that generates second visible light when ultraviolet visible light generated from the ultraviolet visible excitation light generation unit irradiates the phosphor screen as excitation light for acquiring white light by mixing the first visible light from the ultraviolet visible excitation light generation unit and the second visible light from the fluorescence generation unit, wherein:

the phosphor screen includes phosphor expressed by the following composition formula,

the phosphor composition formula: $(L_{1-a-b}Gd_aCe_b)_3(Al_{1-c}Ga_c)_5O_{12}:M_d$

wherein, L is at least one type of rare-earth element selected from a group of La, Y, Lu and Sc, a, b and c are each in the following composition ranges of $0 \leq a < 1.0$, $0 < b \leq 0.1$ and $0 \leq c \leq 1.0$, M is dopant of a monovalent metal element selected from a group consisting of Li, Na, K, Cu, Ag and Au and the content d is in a range of $0 < d \leq 1000$ wt-ppm.

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16. (New) A light source according to Claim 15, wherein:

the content d is in a range of $50 \leq d \leq 500$ wt-ppm.

17. (New) A light source according to claim 15, wherein:

a GdAlO_3 diffraction line in an orientation of (211) of phosphor expressed by the composition formula has intensity of 1/5 or less for a diffraction line in an orientation of (420) of the phosphor having the composition in the measurement of X-ray diffraction intensity using $\text{K}\alpha$ -characteristic X-rays using Cu for material.

18. (New) A display provided with a liquid crystal display panel, a light source forming a backlight of the liquid crystal display panel and control means that controls visible light generated from the light source and displays image information on the liquid crystal display panel, wherein:

the light source is provided with an ultraviolet visible excitation light generation unit that generates first visible light and ultraviolet light and a fluorescence generation unit having a phosphor screen that generates second visible light when ultraviolet visible light generated from the ultraviolet visible excitation light generation unit irradiates the phosphor screen as excitation light so as to acquire white light by mixing the first visible light from the ultraviolet visible excitation light generation unit and the second visible light from the fluorescence generation unit; and

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the phosphor screen includes phosphor expressed by the following composition formula,

the phosphor composition formula: $(L_{1-a-b}Gd_aCe_b)_3(Al_{1-c}Ga_c)_5O_{12}:M_d$

wherein, L is at least one type of rare-earth element selected from a group of La, Y, Lu and Sc, a, b and c are each in the following composition ranges of $0 \leq a < 1.0$, $0 < b \leq 0.1$ and $0 \leq c \leq 1.0$, M is dopant of a monovalent metal element selected from a group consisting of Li, Na, K, Cu, Ag and Au and the content d is in a range of $0 < d \leq 1000$ wt-ppm.

19. (New) A light source provided with an ultraviolet visible excitation light generation unit that generates first visible light and ultraviolet light and a fluorescence generation unit having a phosphor screen that generates second visible light when ultraviolet visible light generated from the excitation light generation unit irradiates the phosphor screen as excitation light for acquiring white light by mixing the first visible light from the ultraviolet visible excitation light generation unit and the second visible light generated from the fluorescence generation unit, wherein:

the phosphor screen includes phosphor expressed by the following composition formula,

the phosphor composition formula: $(L_{1-a-b}Gd_aCe_b)_3(Al_{1-c}Ga_c)_5O_{12}:M_d$

wherein, L is at least one type of rare-earth element selected from a group of La, Y, Lu and Sc, a, b and c are each in the following composition ranges of $0 \leq a <$

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1.0, $0 < b \leq 0.1$ and $0 \leq c \leq 1.0$, M is the element potassium (K) and the content d is in a range of $50 \leq d \leq 500$ wt-ppm.

20. (New) A light source according to claim 19, wherein:

a GdAlO_3 diffraction line in an orientation of (211) of phosphor expressed by the composition formula has intensity of 1/5 or less for a diffraction line in an orientation of (420) of the phosphor having the composition in the measurement of X-ray diffraction intensity using $\text{K}\alpha$ -characteristic X-rays using Cu for material.

21. (New) A display provided with a liquid crystal display panel, a light source forming a backlight of the liquid crystal display panel and control means that controls visible light generated from the light source and displays image information on the liquid crystal display panel, wherein:

the light source is provided with an ultraviolet visible excitation light generation unit that generates first visible light and ultraviolet light and a fluorescence generation unit having a phosphor screen that generates second visible light when ultraviolet visible light generated from the excitation light generation unit irradiates the phosphor screen as excitation light so as to acquire white light by mixing the first visible light from the ultraviolet visible excitation light generation unit and the second visible light from the fluorescence generation unit; and

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the phosphor screen includes phosphor expressed by the following
composition formula,

the phosphor composition formula: $(L_{1-a-b}Gd_aCe_b)_3(Al_{1-c}Ga_c)_5O_{12}:M_d$

wherein, L is at least one type of rare-earth element selected from a group of
La, Y, Lu and Sc, a, b and c are each in the following composition ranges of $0 \leq a <$
 1.0 , $0 < b \leq 0.1$ and $0 \leq c \leq 1.0$, M is the element potassium (K) and the content d is
in a range of $50 \leq d \leq 500$ wt-ppm.